

Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

McKenzie Creek (BOD)

Waterbody Segment at a Glance:

County: Wayne
Nearby Cities: Piedmont
Length of impairment: 2.5 miles
Pollutant: Biochemical Oxygen Demand (BOD)
Source: Piedmont Wastewater Treatment Facility (WWTF)



State map showing location of watershed

See also McKenzie Creek pH Information Sheet

TMDL Priority Ranking: High

Description of the Problem

Beneficial uses of McKenzie Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

- Missouri's Water Quality Standards (WQS), 10 CSR20-7.031 (4)(A)3 and Table A, require dissolved oxygen levels (related to BOD) to be no less than 5.0 mg/L unless the natural (uninfluenced by water pollutants) dissolved oxygen level is less. In that case, the natural level becomes the minimum allowable standard

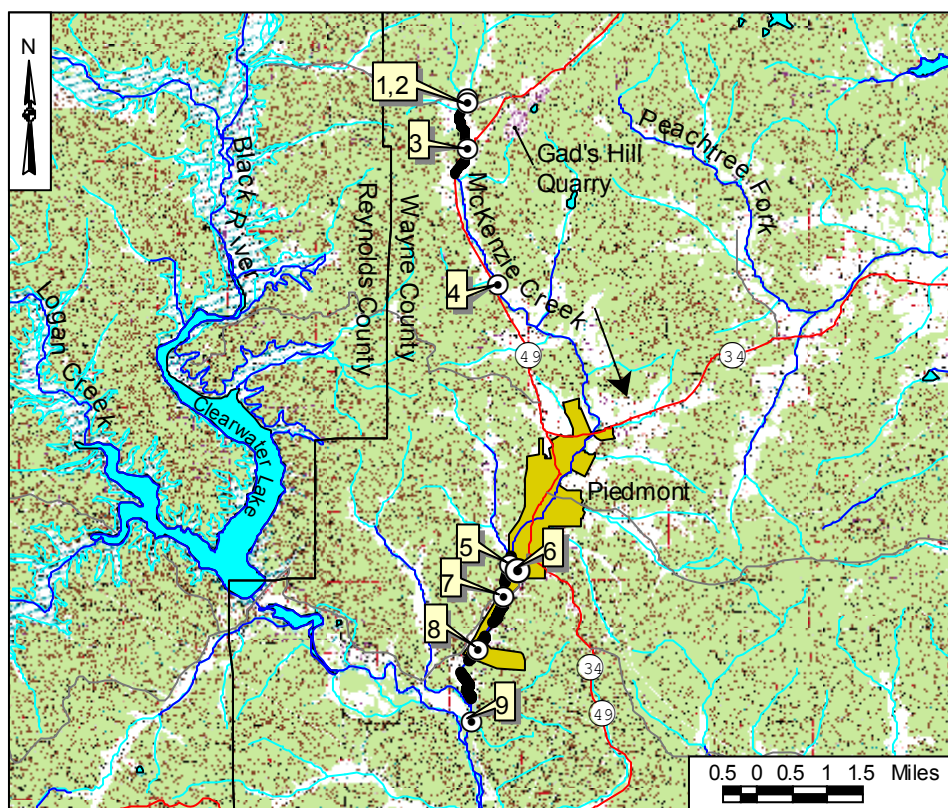
Background Information and Water Quality Data

McKenzie Creek is a tributary to the Black River. The department conducted three water quality surveys in 2000 and 2001, which showed that the Piedmont wastewater lagoon causes significant reductions in the dissolved oxygen levels in the lower portion of McKenzie Creek. Discharges from wastewater treatment plants are known to be high in Biochemical Oxygen Demand (BOD) and nitrogen and phosphorus. BOD and plant nutrients such as nitrogen and phosphorus can reduce the amount of dissolved oxygen in the stream's water. Reduced dissolved oxygen in the stream adversely affects aquatic organisms. A summary of water quality data for McKenzie Creek is given in the table below.

Table 1. Mean Early Morning Water Quality of McKenzie Creek in the Vicinity of the Piedmont Wastewater Lagoon, 2000-2001.						
Location	Flow (cfs)	D.O. (mg/L)	NH3N (mg/L)	NO3N (mg/L)	Total Phosphorus (mg/L)	CBOD (mg/L)
McKenzie Cr. 30 yards above Piedmont Lagoon	2.6	4.1	<0.05	0.25	0.02	<2
Piedmont Wastewater Lagoon effluent	0.35	0.7	10.18	0.09	3.02	16.2
McKenzie Cr. 0.4 mile below Lagoon	4.2	1.5	0.43	0.48	0.26	<2
McKenzie Cr. 1.4 mile below Lagoon	5.1	2.3	<0.05	0.28	0.19	<2
McKenzie Cr. 2.4 miles below Lagoon	4.4	3.4	<0.05	0.17	0.08	<2

Source: Missouri Department of Natural Resources

McKenzie Creek in Wayne County, Missouri, Showing the Impaired Segment and the Sampling Sites



— — — ■ Impaired Segment

————→ Direction of Flow

An index to the sites is on the next page.

Site Index

- 5 – McKenzie Creek 30 yards above Piedmont Lagoon
- 6 – Piedmont Lagoon outfall
- 7 – McKenzie Creek 0.4 mile below Piedmont Lagoon
- 8 – McKenzie Creek 1.4 miles below Piedmont Lagoon
- 9 – McKenzie Creek 2.4 miles below Piedmont Lagoon

For more information call or write:

Missouri Department of Natural Resources

Water Protection Program

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